

## ABSTRACT

The present invention is to clarify causes of hampering the performance by quantitatively associating a value of a parallel efficiency with factors of hampering the improvement of the performance of a parallel computer system. Processing time  $\alpha(p, n)$  for a portion to be sequentially processed, processing time  $\beta(p, n)/p$  for a portion to be parallel processed and processing time  $\sigma(p, n)$  caused by an overhead for the parallel processing at the time of the execution of a parallel processing program are measured. A parallelized rate  $R_{para}(p, n)$ , a sequential calculation time ratio  $R_\alpha(p, n)$  and a parallel overhead ratio  $R_\sigma(p, n)$  are calculated by using the obtained processing time  $\sigma(p, n)$  for the portion to be sequentially processed,  $\beta(p, n)$  for the portion to be parallel processed and  $\sigma(p, n)$  caused by the overhead for the parallel processing. A parallel efficiency  $E_{para}(p, n)$  is calculated in accordance with an expression  $1/R_{para}(p, n) \times (1 - R_\alpha(p, n) - R_\sigma(p, n))$ .